

IN THE SPECIFICATION:

Please replace the first complete paragraph on page 4 through the paragraph ending on page 7 with the following:

Means to Attain the Object

The inventors have ~~been~~ intensely studied the function and the role of Na_v2 channel *in vivo*, which was unknown, and generated Na_v2 channel knockout mice, then confirmed that Na_v2 channel plays a role to sense and control sodium ion level in body fluids. Subsequently, it has been found that these Na_v2 channel knockout mice show salt intake behavior similar to that of wild-types under water-sufficient conditions and show abnormal behavior such as much ~~more~~ higher intakes of hypertonic saline compared with wild-types under water- and salt-depleted conditions, and thus the present invention has been completed.

In other words, this invention relates to a null mutant non-human animal characterized in showing salt intake behavior similar to that of wild-type animals under water-sufficient conditions and showing much ~~more~~ higher intakes of hypertonic saline compared with wild-type animals under water- and salt-depleted conditions (~~Claim 1~~), the null mutant non-human animal ~~according to claim 1~~ characterized in showing salt intake behavior similar to that of wild-type animals under water-sufficient conditions and showing much more intakes of hypertonic saline compared with wild-type animals under water- and salt-depleted conditions, wherein the function of Na_v2 gene is deficient on its chromosome (~~Claim 2~~), the null mutant non-human animal ~~according to claim 2~~, wherein the non-human animal is a rodent (~~Claim 3~~), and the null mutant non-human animal ~~according to claim 3~~, wherein the rodent is a mouse (~~Claim 4~~).

This invention also relates to a gene that codes for a protein acting as a sensor of extracellular sodium ion level (~~Claim 5~~), the gene ~~according to claim 5~~ that codes for a protein acting as a sensor of extracellular sodium ion level, wherein the protein is comprised of the

amino acid sequence shown in Seq. ID No. 3, or is comprised of an amino acid sequence where one or a few amino acids are deficient, substituted, or added, in the amino acid sequence shown in Seq. ID No. 3, the gene ~~according to claim 5~~ that codes for a protein acting as a sensor of extracellular sodium ion level, which is comprised of DNA that contains a base sequence shown in Seq. ID No. 2 or its complimentary sequence, and a part or whole of those sequences (~~Claim 7~~), and the gene ~~according to claim 5~~ that codes for a protein acting as a sensor of extracellular sodium ion level, which is comprised of DNA being hybridized under stringent conditions with DNA that contains a base sequence shown in Seq. ID No. 2 or its complimentary sequence, and a part of or whole of those sequences (~~Claim 8~~).

This invention relates to a protein acting as a sensor of extracellular sodium ion level (~~Claim 9~~), the protein ~~according to claim 9~~ acting as a sensor of extracellular sodium ion level, which is comprised of amino acid sequence shown in Seq. ID No. 3 (~~Claim 10~~), the protein ~~according to claim 9~~ acting as a sensor of extracellular sodium ion level, which is comprised of amino acid sequence where one or a few amino acids are deficient, substituted, or added, in amino acid sequence shown in Seq. ID No. 3 (~~Claim 11~~), a fusion protein created by combining a protein acting as a sensor of extracellular sodium ion level and a marker protein and/or a peptide tag (~~Claim 12~~), and the fusion protein ~~according to claim 12~~ created by combining a protein acting as a sensor of extracellular sodium ion level and a marker protein and/or a peptide tag, wherein the protein acting as a sensor of extracellular sodium ion level is the protein ~~according to claims 10 or 11~~ (~~Claim 13~~) acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence shown in Seq. ID No. 3, or the protein acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence where one or a few amino acids are deficient, substituted, or added, in amino acid sequence shown in Seq. ID No. 3.

This invention also relates to an antibody which specifically combines with a protein acting as a sensor of extracellular sodium ion level (~~Claim 14~~), the antibody ~~according to claim 14~~ which specifically combines with a protein acting as a sensor of extracellular sodium ion level wherein the protein acting as a sensor of extracellular sodium ion level is the protein ~~according to claims 10 or 11 (Claim 15)~~ acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence shown in Seq. ID No. 3, or the protein acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence where one or a few amino acids are deficient, substituted, or added, in amino acid sequence shown in Seq. ID No. 3, and the antibody ~~according to claims 14 or 15~~, wherein the antibody is a monoclonal antibody (~~Claim 16~~).

This invention relates to a host cell which contains an expression system that can express a protein acting as a sensor of extracellular sodium ion level (~~Claim 17~~), and the host cell ~~according to claim 17~~ which contains an expression system that can express a protein acting as a sensor of extracellular sodium ion level, wherein the protein acting as a sensor of extracellular sodium ion level is the protein ~~according to claims 10 or 11 (Claim 18)~~ acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence shown in Seq. ID No. 3, or the protein acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence where one or a few amino acids are deficient, substituted, or added, in amino acid sequence shown in Seq. ID No. 3.

This invention also relates to a transgenic non-human animal which excessively expresses a protein acting as a sensor of extracellular sodium ion level (~~Claim 19~~), the transgenic non-human animal ~~according to claim 19~~ which excessively expresses a protein acting as a sensor of extracellular sodium ion level, wherein the protein acting as a sensor of extracellular sodium ion level is the protein ~~according to claims 10 or 11 (Claim 20)~~ acting as a sensor of

extracellular sodium ion level which is comprised of amino acid sequence shown in Seq. ID No. 3, or the protein acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence where one or a few amino acids are deficient, substituted, or added, in amino acid sequence shown in Seq. ID No. 3, and the transgenic non-human animal according to claims 19 or 20 wherein the non-human animal is a mouse or rat (Claim 21).

This invention relates to a method of screening a material that promotes or suppresses the function or the expression of a protein acting as a sensor of extracellular sodium ion level characterized in using a cell that expresses a protein acting as a sensor of extracellular sodium ion level, and a subject material (~~Claim 22~~), the method of screening a material that promotes or suppresses the function or the expression of a protein acting as a sensor of extracellular sodium ion level characterized in using the non-human animal ~~according to any one of claims 19 to 21~~ which excessively expresses a protein acting as a sensor of extracellular sodium ion level, the non-human animal which excessively expresses a protein acting as a sensor of extracellular sodium ion level wherein the protein acting as a sensor of extracellular sodium ion level is the protein acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence shown in Seq. ID No. 3 or the protein acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence where one or a few amino acids are deficient, substituted, or added, in amino acid sequence shown in Seq. ID No. 3, and the transgenic non-human animal wherein the non-human animal is a mouse or rat, and a subject material (Claim 24).

This invention relates to a material that promotes or suppresses the function or the expression of a protein acting as a sensor of extracellular sodium ion level characterized in being available through any one of the screening methods discussed in the preceding paragraph according to any one of claims 22 to 24 (Claim 25), a medical compound used for curing patients

who need promotion of the function or enhancement of the expression of a protein acting as a sensor of extracellular sodium ion level, and containing the protein ~~according to any one of claims 9 to 11~~ acting as a sensor of extracellular sodium ion level, the protein acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence shown in Seq. ID No. 3, or the protein acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence where one or a few amino acids are deficient, substituted, or added, in amino acid sequence shown in Seq. ID No. 3, or the material that promotes the function or the expression of a protein acting as a sensor of extracellular sodium ion level ~~according to claim 25~~ characterized in being available through any one of the screening methods discussed above, which is comprised of amino acid sequence shown in Seq. ID No. 3 ~~(Claim 10)~~, the protein ~~according to claim 9~~ acting as a sensor of extracellular sodium ion level, which is comprised of amino acid sequence where one or a few amino acids are deficient, substituted, or added, in amino acid sequence shown in Seq. ID No. 3 as its effective components ~~(Claim 26)~~, and a medical compound used for curing patients who need suppression of the function or the expression of a protein acting as a sensor of extracellular sodium ion level, and containing the protein ~~according to any one of claims 9 to 11~~ acting as a sensor of extracellular sodium ion level, the protein acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence shown in Seq. ID No. 3, or the protein acting as a sensor of extracellular sodium ion level which is comprised of amino acid sequence where one or a few amino acids are deficient, substituted, or added, in amino acid sequence shown in Seq. ID No. 3, or the material that suppresses the function or the expression of a protein acting as a sensor of extracellular sodium ion level ~~according to claim 25~~ characterized in being available through any one of the screening methods discussed above ~~(Claim 27)~~.